

**USDA**  
**NATURAL RESOURCES**  
**CONSERVATION SERVICE**  
  
**DELAWARE CONSERVATION**  
**PRACTICE STANDARD**  
  
**STRUCTURE FOR WATER**  
**CONTROL**

**CODE 587**  
**(Reported by No.)**

**DEFINITION**

A structure in a water management system that conveys water, controls the direction or rate of flow, maintains a desired water surface elevation, or measures water.

**PURPOSES**

The practice may be applied as a management component of a water management system to control the stage, discharge, distribution, delivery, or direction of water flow.

**CONDITIONS WHERE PRACTICE**  
**APPLIES**

This practice applies wherever a permanent structure is needed as an integral part of a water-control system to serve one or more of the following functions:

- Convey water from one elevation to a lower elevation within, to, or from a water conveyance system such as a ditch, channel, canal, or pipeline designed to operate under open channel conditions. Typical structures: drops, chutes, turnouts, surface water inlets, head gates, pump boxes, and stilling basins.
- Control the elevation of water in drainage or irrigation ditches. Typical structures: checks, flashboard risers, and check dams.
- Control the division or measurement of irrigation water. Typical structures: division boxes and water measurement devices.
- Keep trash, debris, or wood seeds from entering pipelines. Typical structure: debris screen.
- Control the direction of channel flow resulting from tides and high water or back-flow from flooding. Typical structures: tide and water management gates.
- Control the water table level, remove surface or subsurface water from adjoining land, flood land for frost protection, or manage water levels for wildlife or recreation. Typical structures: water level control structures, flashboard risers, pipe drop inlets, and box inlets.
- Convey water over, under, or along a ditch, canal, road, railroad, or other barriers. Typical structures: bridges, culverts, flumes, inverted siphons, and long span pipes.
- Modify water flow to provide habitat for fish, wildlife, and other aquatic animals. Typical structures: chutes, cold water release structures, and flashboard risers.
- Provide silt management in ditches or canals. Typical structure: sluice.
- Supplement a resource management system on land where organic waste or commercial fertilizer is applied.
- Create, restore, or enhance wetland hydrology.

Conservation practice standards are reviewed periodically, and updated if needed. To obtain the current version of this standard, contact the Natural Resources Conservation Service.

### **CONSIDERATIONS**

When planning, designing, and installing this practice, the following items should be considered:

- Effects on the water budget, especially on volumes and rates of runoff, infiltration, evaporation, transpiration, deep percolation, and ground water recharge.
- Potential for a change in the rate of plant growth and transpiration because of changes in the volume of soil water.
- Effects on downstream flows or aquifers that would affect other water uses or users.
- Effects on the field water table to ensure that it will provide a suitable rooting depth for the anticipated crop.
- Potential use for irrigation management to conserve water.
- Effect of construction on aquatic life.
- Effects on stream system channel morphology and stability as it relates to erosion and the movement of sediment, solutes, and sediment-attached substances carried by runoff.
- Effects on the movement of dissolved substances below the root zone and to groundwater.
- Short term and construction-related effects of this practice on the quality of downstream water.
- Effects of water level control on the temperatures of downstream waters and their effects on aquatic and wildlife communities.
- Effects on wetlands or water-related wildlife habitats.
- Effects on the turbidity of downstream water resources.
- Conservation and stabilization of archeological, historic, structural, and

traditional cultural properties when appropriate.

- Care must be used to protect the surrounding visual resources.
- If watercourse fisheries are important, special precautions or design features may be needed to facilitate continuation of fish migrations.

Design alternatives presented to the client should address economics, ecological concerns, and acceptable level of risk for design criteria as it relates to hazards to life or property.

This practice has the potential to affect National Register listed cultural resources or eligible (significant) cultural resources. These may include archeological, historic, or traditional cultural properties. Care should be taken to avoid adverse impacts to these resources. Follow NRCS state policy for considering cultural resources during planning.

### **CRITERIA**

#### **Criteria Applicable to All Purposes**

Vegetation complying with Critical Area Planting Standard (Code 342) shall be established on all disturbed earth surfaces. Where soil, climate, or site specific conditions preclude establishing permanent vegetation, other protective means such as mulches or gravels shall be used.

The structure shall be fenced, if necessary, to protect the vegetation.

Structures shall not be installed that have an adverse effect on septic filter fields.

The water level upstream of water control structures shall not be raised on adjacent landowners without their permission.

### **SPECIFICATIONS**

Plans and specifications for this practice shall be prepared in accordance with the previously listed criteria. Plans and specifications shall contain sufficient detail to ensure successful implementation of this practice. Documentation shall be in accordance with the section "Supporting Data and Documentation" in this standard.

### **OPERATION AND MAINTENANCE**

An operation and maintenance plan shall be provided to and reviewed with the land manager. The plan shall be site specific and include but not be limited to the following:

Structures will be checked and necessary maintenance, including removal of debris, shall be performed after major storms and at least semi-annually. Water level management and timing shall be adequately described wherever applicable.

### **SUPPORTING DATA FOR DOCUMENTATION**

The following is a list of the minimum data and documentation to be recorded in the case file:

1. Location the practice on the conservation map.
2. Assistance notes. The notes shall include dates of site visits, name or initials of the person who made the visit, specifics as to alternatives discussed, decisions made, and by whom.

#### **Field Data and Survey Notes**

The following is a list of the minimum data needed:

1. Plan view sketch.
2. Site access.
3. Location of the proposed structure for water control.

4. Profile of the existing conditions between the starting point and destination as appropriate.
5. Cross-sections as appropriate.
6. Topographic survey as needed for the location and elevation of the structure for water control components and appurtenances.
7. Soil borings to determine foundation conditions.

#### **Design Data**

Record on appropriate engineering paper. For guidance on the preparation of engineering plans see Chapter 5 of the Engineering Field Handbook - Part 650. The following is a list of the minimum required design data:

1. Determine soil classification and any special restrictions.
2. Determine design discharges from the contributing drainage area for the required design storm in accordance with Chapter 2, EFH Part 650, or by other approved method.
3. Design the structure for water control components in accordance with the Chapter 3, EFH Part 659, and Chapter 6, EFH Part 650, or by other approved methods.
4. Plan view sketch and final grading plan as required.
5. Structural details of all components with dimensions and special requirements noted.
6. Include the Miss Utility notification statement.
7. Show job class on the plan.
8. Special safety requirements.
9. Seeding, fertilizing, and mulching requirements.
10. Estimated quantities and cost estimate.
11. Written Operation and Maintenance Plan.

### **Utilities Notification**

1. Forms ENG-5 and ENG-6 can be used to assist in tracking utility notifications.
2. Document on CPA-6 initial discussion about his or her responsibility to notify Miss Utility.
3. Document on CPA-6 any information from the landowner about the existence and location of known utilities.
4. Document on CPA-6 assurances from the landowner that Miss Utility has been notified, including staking by the utilities.

In addition, the as-built drawings shall include name of the installer, manufacturer, and date of completion of each transfer system and/or component. The as-built records shall also include any applicable "Statement of Conformance" presented or certified by suppliers of structures or equipment. The design folder, as-built drawings, certifications, and specifications shall be filed in the case file.

### **Construction Check Data/As-Built Plans**

Record on survey notepaper, NRCS-ENG-28, or other appropriate engineering paper. Survey data will be plotted in red on the as-built plans. Document approval by the designer of any changes from the drawings or specifications before implementation of the change.

The following is a list of minimum data needed for as-built documentation:

1. Documentation of site visits on CPA-6. The documentation shall include the date, who performed the inspection, specifics as to what was inspected, all alternatives discussed, and decisions made and by whom.
2. Check notes recorded during or after completion of construction showing dimensions and elevations of the structure, as appropriate.
3. Statement on seeding and fencing.
4. Final quantities and documentation for quantity changes. Materials certifications as appropriate.
5. Sign and date check-notes and plans by someone with appropriate approval authority. Include statement that practice meets or exceeds plans and NRCS practice standards.